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EXAMINER	
WILSON, ROBERT W	

ART UNIT	PAPER NUMBER
2661	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/804,144	YU, SHAOHUA	
	Examiner	Art Unit	
	Robert W Wilson	2661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 March 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-45,47-49 and 51-89* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-44,47-49 and 51-89* is/are rejected.

7)☒ Claim(s) *45* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1.0 The application of Shaohua Yu entitled DATA TRANSMISISON APPARTUS AND METHOD FOR TRANSMITTING DATA BETWEEN PHYSICAL LAYER SIDE DEVICE AND NETWORK LAYER DEVICE which was filed on 3/13/01 and claimed foreign priority relative to CHINA 99111654.6 dated 7/14/1999. Claims 1-45, 47-49, & 51-89 are pending

Claim Rejections - 35 USC § 103

2.0 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-21, 24-44, & 54-88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto et. al. (U.S. Patent No.: 6,731,876) in view of Araujo et al. (U.S. Patent No.: 6,097,720)

Referring to Claim 1, Okamoto discloses: A data transmission apparatus for transmitting data packets from a network layer side device and a physical layer side device (Fig 7

First receiving means for receiving the data packets of a certain type from the network layer side device (21 per Fig 7)

SAPI identifier generating means for recognizing the type of the data packets and the generating a SAPI identifier according to the recognized type (23 per Fig 7 converts packets from IP to PPP)

First framing means for encapsulating the SAPI field including said SAPI identifier and an information field including said data packets into a frame to form a first type of frames (23 per Fig 7 converts packets from IP to PPP)

Second framing means for encapsulating the first type frames into a payload portion, inserting appropriate overheads to form a second type of frame (24 & 25 per Fig 7

A first transmitting means for outputting said second type of frames to the physical layer side device (27 per Fig 7)

Okamonto does not expressly call for: SAPI identifier but teaches that an IP packet is inserted into an PPP packet per col. 9 line 31-col. 10 line 56.

Araujo teaches: SAPI identifier (100 per Fig 2 or SAPI identifier and col. 3 line 28-30 and col. 4 line 63-col. 5 line 26)

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the Protocol or SAPI identifier field to the apparatus of Okamonto in order to build PPP converter to SONET which is standards compliant

In Addition Araujo teaches:

Regarding Claim 2, wherein said first framing means encapsulates said data in a format of start flag , SAPI field including said SAPI identifier as address field, control field, information including data packets, FCS field , and end flag to form the first type of frames (103 or start flag, 100 or SAPI field, value in 110 or SAPI identifier, 104 or address, 101 or information, 106 or FCS 107 or end flag per Fig 2)

Regarding Claim 3, wherein said SAPI field is one single octet and said control field is of one single octet (100 or SAPI field can be 8 bits or a single octet)

Regarding Claim 4, wherein said first framing means encapsulates said data in a format of start flag, address field, control field, SAPI field including said SAPI identifier, information field including said data packets, FCS field, and end flag to form the first type of frames (103 or start flag, 100 or SAPI field, value in 110 or SAPI identifier, 104 or address, 101 or information, 106 or FCS 107 or end flag per Fig 2)

Regarding Claim 5, further comprising a frame type indicator generating means for generating an indicator which indicates the type of first type of frames, and said frame type indicator is inserted in the address field by said first framing means (104 per Fig 2)

Regarding Claim 6. where in said address field is of one single octet, said control field is of one single octet, and said SAPI field is two octets (Araujo teaches address field an octet, control field is an octet, and protocol or SAPI field is 16 bits or two octets per Fig 2)

Regarding Claim 7 further comprising a self-synchronizing scrambling means for performing X to 43 +1 scrambling said scrambling means includes a XOR gate and a 43-bit shift register, and the output bits is exclusive-ordered with the raw input data bits to produce the transmitted bits

(The examiner takes official notice that polynomial scrambling in SONET is well known in the art. The value of the polynomial chosen is based upon a design choice. It would have been obvious to one of ordinary skill in the art at the time of the invention to scramble the data prior to insertion into the SONET frame)

Regarding Claim 9, wherein said first receiving means is a first FIFO for receiving and buffering the input data packets (21 per Fig 7 or FIFO)

Regarding Claim 10, wherein the said start flag and end flag are "07E" (103 or start and 107 or end per Fig 2. The value is a design choice)

Regarding Claim 11, wherein said first framing means performs inter-frame fill (Padding per Fig 3 or interframe fill)

Regarding Claim 12, wherein said first framing means performs transparency processing (octet stuffing) to encode 0x7E as 0x7D, 0x5E, 0x7D as 0x7D, 0x5D (Padding per Fig 3. The bit sequence utilized for stuffing is a design choice)

Regarding Claim 13, wherein said first framing means calculates 32 bit frame check sequence fields over all octets within the frame except the start flag and the end flag and the FCS field itself with generating polynomial (The examiner takes official notice that creation of a FCS utilizing a polynomial is well known in the art. It would have been obvious to create a FCS base upon a polynomial in order to detect errors.)

Regarding Claim 20, wherein said data packets from network layer are IPv4, Ipv6, IS-IS, PP packets, or MPEG data stream, each corresponding to a predetermined SAPI value, respectively, and said first type of frames are LAPs frames and the second type of frames are SDH/SONET frames (The applicant broadly claims LAP frames. The primary reference Okamoto teaches convert PPP frames into SDH per Fig 7. The examiner interprets the structure of Araujo Fig 2 as a LAPS frame)

Regarding Claim 23, wherein said SAPI field is "0x04" for IPv4 packets, ""0x6" for IPv6 and "oxff" for PPP related packets or PPP/HDLC (The reference teaches that various kinds of packets can be sent per col. 5 lines 1-26. It would have been obvious to one of ordinary skill in the art at the time of the invention to have a different code in the protocol field for a different packet type)

Regarding Claim 24, wherein said SAPI field is one single octet and said control field is of one single octet said SAPI is "ox04" for Ipv4 packets, "0x06" for Ipv6 packets, "0xff for PP/HDLC packets solution (100 or SAPI field can be 8 bits or a single octet. The reference teaches that multiple packet types can be sent in the information field. Specific codes for packet types are a design choice)

In Addition Okamoto teaches:

Regarding Claim 8, further comprising a pointer inserting means for inserting pointer which indicates the start position of the payload in said first type of frames (24 per Fig 7)

Regarding Claim 14, wherein said payload portion includes a plurality of sub-portions of payload for carrying said first type of frames and the boundaries of said first type of frames are aligned with the boundaries of the payload portion (col. 1 lines 19-col. 2 line 22)

Regarding Claim 15, wherein said SAPI generating means obtains the SAPI from the first FIFO (The protocol value or SAPI is based upon data received from 21 per Fig 7)

Regarding Claim 16, wherein the end flag of a previous frame is the start flag of a subsequent frame (The examiner take official notice that the end flag of a previous frame is the start flag of a subsequent frame is well known in the art per Para 3.1 on pg 5 of RFC 1662. It would have been obvious to one of ordinary skill in the art at the time of the invention to add the processing of the RFC in order to be standards compliant.)

Regarding Claim 17, further comprising packet size processing means with a preset minimum packet size (mPS) and a maximum packet size (MPS), and if the input packet is longer than the MPS or shorter than the mPS, generate a error indication (The examiner takes official notice that generating errors based upon min and max packet length is well known in the art per U.S. Patent No.; 6,188,699 per col. 15 lines 26-36 associated with HDLC. It would have been obvious to one of ordinary skill in the art at the time of the invention to add the processing of 6,188,699 because PPP was based upon HDLC protocol)

Regarding Claim 18, further comprising line side packet loopback means to loopback the first type of frames extracted from the second frames into the first FIFO for test purposes (The examiner takes official notice that loopback testing in SONET is well known in the art. It would have been obvious to utilize which is allocated from a buffer in order to loopback test)

Regarding Claim 19 wherein said physics layer is one of SDH/SONET, simplified SDH/SONET, pseudo-synchronous digital hierarchy, and WDH (WDM or SDH per col. 1 line 18-col. 2 line 22)

Regarding Claim 21, wherein said payload portion is SPE for SDH/SONET, and virtual containers as the sub-portions of the payload (The examiner takes official notice that a SPE is well known in the art of SONET processing. The reference teaches creation of a pointer for a VC. It would have been obvious to one of ordinary skill in the art at the time of the invention that the pointer points to a VC inside of a SPE.)

Referring to Claim 25, Okamoto (U.S. Patent No.: 6,731,876 B1) teaches: A data transmission apparatus for data packets formed encapsulating a first type of frames in a second type of frames as payload with appropriate overheads, from a physical layer side device to a network layer side

device, each of said first type of frames including a SAPI field, and an information field (Fig 7) said apparatus comprising:

A second receiving means for receiving the data packets from the physical device (27 per Fig 7. It would have been obvious to one of ordinary skill in the art a the time of the invention that the inverse functions can be performed in order for data to be received from a transmitter)

A second de-framing means for removing the overheads, and extracting the first type of frames from the payload of the second type of frames (25 & 24 per Fig 7. It would have been obvious to one of ordinary skill in the art a the time of the invention that the inverse functions can be performed in order for data to be received from a transmitter)

A first de-framing means for extracting the address field and the data contained in the information field contained in the information field from the first type of frames (23 per Fig 7 converts from PPP to IP. It would have been obvious to one of ordinary skill in the art a the time of the invention that the inverse functions can be performed in order for data to be received from a transmitter)

Determining means for comparing the value of the SAPI field with a set of preset values including at least a first value and a second value, and if the value of the SAPI field data matches the first value, determining the extracted data is a first type and if the value of the SAPI field matches the second value, determining the extracted data is of a second type (23 per Fig 7 converts from PPP to IP. It would have been obvious to one of ordinary skill in the art a the time of the invention that the inverse functions can be performed in order for data to be received from a transmitter)

A second transmitting means for transmitting the extracted data packets and the determining result to the network layer side device (21 per Fig 7)

Okamonto does not expressly call for: SAPI identifier but teaches that an IP packet is inserted into an PPP packet per col. 9 line 31-col. 10 line 56.

Araujo teaches: SAPI identifier (100 per Fig 2 or SAPI identifier and col. 3 line 28-30 and col. 4 line 63-col. 5 line 26)

It would have been obvious to one of ordinary skill in the art at the time of the invention to remove the Protocol or SAPI identifier field in the apparatus of Okamonto in order to SONET to IP converter which is standards compliant.

In Addition Araujo teaches:

Regarding Claim 26, wherein said first type of frames include start flag, address field, control field, information field including said data packets, FCS field, and end flag, and said SAPI field is at the address field (Protocol or SAPI which has an address field per Fig 2)

Regarding Claim 27, wherein said SAPI field is one single octet and said control field is of one single octet said SAPI is "ox04" for Ipv4 packets, "0x06" for Ipv6 packets, "0xff for PP/HDLC packets solution (100 or SAPI field can be 8 bits or a single octet. The reference teaches that multiple packet types can be sent in the information field. Specific codes for packet types are a design choice)

Regarding Claim 28, wherein said first framing means encapsulates said data in a format of start flag, address field, control field, SAPI field including said SAPI identifier, information field including said data packets, FCS field, and end flag to form the first type of frames (103 or start flag, 100 or SAPI field, value in 110 or SAPI identifier, 104 or address, 101 or information, 106 or FCS 107 or end flag per Fig 2)

Regarding Claim 29, further comprising a frame type indicator generating means for generating an indicator which indicates the type of first type of frames, and said frame type indicator is inserted in the address field by said first framing means (104 per Fig 2)

Regarding Claim 30, wherein determining means comprising a frame type recognizing means for extracting the frame type indicator from the address field to recognize the type of the frame type encapsulated in the address field to recognize the type of the first type of frame encapsulated in the SDH/SONET frames, if the frame type indicator is "04x04 , the received frames are determined to be LAPs frames , if the frame type indicator is 'oxff", the received frame are PPP frames (The reference teaches that various kinds of packets can be sent per col. 5 lines 1-26. It would have been obvious to one of ordinary skill in the art at the time of the invention to have a different code in the address field for a different packet type)

Regarding Claim 31, wherein said determining means further comprising a SAPI extracting means for extracting the SAPI value from the SAPI field following the control field if the frame type recognizing means determines the frame type indicator in the address field is "0x04", which indicates the received frame are LAPS frames, the SAPI extracting means goes to the SAPI field to extract the SAPI value which shows the type of data packets, i.e., "0x0021" for Ipv4 data packets, "0x0057" for Ipv6 data packets, if the frame type recognizing means determines the frame type indicator in the address field is "0xff", and the SAPI is "0021" then the received frames are determined to be PPP frames , and can be set for further PPP processing (The applicant broadly claims "LAPS frames". The reference teaches that various kinds of packets can be sent per col. 5 lines 1-26. It would have been obvious to one of ordinary skill in the art at the time of the invention to have a different code in the protocol or SAPI field and address field for different kinds of packets)

Regarding Claim 32 wherein said determining means perform the determining function of the first four octets for each of the first type of frames: the address field (one octet) the control field (one octet, and the SAPI field (tow octets), for facilitating a 32 bit processing the first four octets "04 03 00 21" represents Ipv4 packets, "04 03 57" represents Ipv6 packets and "ff 03 00 21" represent Ipv4 PPP/HDLC solution (The reference teaches that various kinds of packets can be

sent per col. 5 lines 1-26. It would have been obvious to one of ordinary skill in the art at the time of the invention to have a different code in the address field for a different packet types which is a design choice)

Regarding Claim 33 further comprising a descrambling means for performing X to 43+1 descrambling, said de-scrambling means includes a XOR gate and a 43 bit shift register, and the output bits is exclusive-order with the input scrambled data bits to produce the unscrambled data (The examiner takes official notice that polynomial descrambling in SONET is well known in the art. The value of the polynomial chosen is based upon a design choice. It would have been obvious to one of ordinary skill in the art at the time of the invention to descramble the data after removal from the SONET frame)

Regarding Claim 44, wherein said data packets from network layer are IPv4, Ipv6, IS-IS, PP packets, or MPEG data stream, each corresponding to a predetermined SAPI value, respectively, and said first type of frames are LAPs frames and the second type of frames are SDH/SONET frames (The applicant broadly claims LAP frames. The primary reference Okamoto teaches convert PPP frames into SDH per Fig 7. The examiner interprets the structure of Araujo Fig 2 as a LAPS frame)

In Addition Okamoto teaches:

Regarding Claim 34, further comprising a pointer interpretation means for locating the start of the first type of frames encapsulated in the second type of frames indicated by the pointer (24 per Fig 7)

Regarding Claim 35, wherein said second transmitting is a second FIFO for receiving the buffering the extracted data packets (21 per Fig 7 or FIFO)

Regarding Claim 36, wherein the said start flag and end flag are "07E" (103 or start and 107 or end per Fig 2. The value is a design choice)

Regarding Claim 37, wherein said first framing means performs inter-frame fill (Padding per Fig 3 or interframe fill)

Regarding Claim 38, wherein said first deframing means performs a decode procedure to decode 0x7E as 0x7D, 0x5E, 0x7D as 0x7D, 0x5D (inverse of Padding per Fig 3. The bit sequence utilized for stuffing is a design choice)

Regarding Claim 39, wherein said first wherein the received FCS field is verified by calculating FCS checksum over all octets between the start flag and the end flag (The examiner takes official notice that reading of a FCS utilizing a polynomial is well known in the art. It would

have been obvious to create a inverse FCS base upon a polynomial in order to detect errors. The polynomial function utilized is a design choice)

Regarding Claim 40, wherein said extracted SAPI value is stored in the second FIFO (21 per Fig 7)

Regarding Claim 41, wherein the end flag of the previous frame is the start flag of a subsequent frame next to said previous frame (The examiner takes official notice end flag next to the start flag of the subsequent next frame to said previous frame is well known in the art per Para 3.1 on Pg 5 of RFC-1662. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate processing defined in RFC-1662 in order to be standards compliant)

Regarding Claim 42, wherein said physics layer is one of SDH/SONET, simplified SDH/SONET, pseudo-synchronous digital hierarchy, and WDH (WDM or SDH per col. 1 line 18-col. 2 line 22)

Regarding Claim 43, wherein said data packets from network layer are IPv4, Ipv6, IS-IS, PP packets, or MPEG data stream, each corresponding to a predetermined SAPI value, respectively, and said first type of frames are LAPs frames and the second type of frames are SDH/SONET frames (The applicant broadly claims LAP frames. The primary reference Okamoto teaches convert PPP frames into SDH per Fig 7. The examiner interprets the structure of Araujo Fig 2 as a LAPS frame)

Referring to Claim 54, Okamoto discloses: A data transmission method for transmitting data packets form a network layer side device and a physical layer side device (Fig 7) comprising the steps of:

receiving the data packets of a certain type from the network layer side device (21 per Fig 7)

recognizing the type of the data packets and generating a SAPI identifier according to the recognized type (23 per Fig 7 converts packets from IP to PPP)

First framing step for encapsulating the SAPI field including said SAPI identifier and an information field including said data packets into a frame to form a first type of frames (23 per Fig 7 converts packets from IP to PPP)

Second framing step for encapsulating the first type frames into a payload portion, inserting appropriate overheads to form a second type of frame (24 & 25 per Fig 7

outputting said second type of frames to the physical layer side device (27 per Fig 7)

Okamonto does not expressly call for: SAPI identifier but teaches that an IP packet is inserted into an PPP packet per col. 9 line 31-col. 10 line 56.

Araujo teaches: SAPI identifier (100 per Fig 2 or SAPI identifier and col. 3 line 28-30 and col. 4 line 63-col. 5 line 26)

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the Protocol or SAPI identifier field to the apparatus of Okamonto in order to build PPP converter to SONET which is standards compliant

In Addition Araujo teaches:

Regarding Claim 55, wherein said first framing step encapsulates said data in a format of start flag , SAPI field including said SAPI identifier as address field, control field, information including data packets, FCS field , and end flag to form the first type of frames (103 or start flag, 100 or SAPI field, value in 110 or SAPI identifier, 104 or address, 101 or information, 106 or FCS 107 or end flag per Fig 2)

Regarding Claim 56, wherein said SAPI field is one single octet and said control field is of one single octet (100 or SAPI field can be 8 bits or a single octet)

Regarding Claim 57, wherein said first framing means encapsulates said data in a format of start flag, address field, control field, SAPI field including said SAPI identifier, information field including said data packets, FCS field, and end flag to form the first type of frames (103 or start flag, 100 or SAPI field, value in 110 or SAPI identifier, 104 or address, 101 or information, 106 or FCS 107 or end flag per Fig 2)

Regarding Claim 58, further comprising a frame type indicator generating means for generating an indicator which indicates the type of first type of frames, and said frame type indicator is inserted in the address field by said first framing means (104 per Fig 2)

Regarding Claim 59, where in said address field is of one single octet, said control field is of one single octet, and said SAPI field is two octets (Araujo teaches address field an octet, control field is an octet, and protocol or SAPI field is 16 bits or two octets per Fig 2)

Regarding Claim 60, further comprising a self-synchronizing scrambling step for performing X to 43 +1 scrambling said scrambling means includes a XOR gate and a 43-bit shift register, and the output bits is exclusive-ordered with the raw input data bits to produce the transmitted bits (The examiner takes official notice that polynomial scrambling in SONET is well known in the art. The value of the polynomial chosen is based upon a design choice. It would have been obvious to one of ordinary skill in the art at the time of the invention to scramble the data prior to insertion into the SONET frame)

Regarding Claim 61, wherein the said start flag and end flag are "07E" (103 or start and 107 or end per Fig 2. The value is a design choice)

Regarding Claim 62, wherein said first framing step performs inter-frame fill (Padding per Fig 3 or interframe fill)

Regarding Claim 69, wherein said SAPI field is one single octet and said control field is of one single octet said SAPI is "ox04" for Ipv4 packets, "0x06" for Ipv6 packets, "0xff for PP/HDLC packets solution (100 or SAPI field can be 8 bits or a single octet. The reference teaches that multiple packet types can be sent in the information field. Specific codes for packet types are a design choice)

Regarding Claim 70, wherein said first framing means encapsulates said data in a format of start flag, address field, control field, SAPI field including said SAPI identifier, information field including said data packets, FCS field, and end flag to form the first type of frames (103 or start flag, 100 or SAPI field, value in 110 or SAPI identifier, 104 or address, 101 or information, 106 or FCS 107 or end flag per Fig 2)

In Addition Okamoto teaches:

Regarding Claim 67 wherein said physics layer is one of SDH/SONET, simplified SDH/SONET, pseudo-synchronous digital hierarchy, and WDH (WDM or SDH per col. 1 line 18-col. 2 line 22)

Regarding Claim 68, wherein said data packets from network layer are IPv4, Ipv6, IS-IS, PP packets, or MPEG data stream, each corresponding to a predetermined SAPI value, respectively, and said first type of frames are LAPs frames and the second type of frames are SDH/SONET frames (The applicant broadly claims LAP frames. The primary reference Okamoto teaches convert PPP frames into SDH per Fig 7. The examiner interprets the structure of Araujo Fig 2 as a LAPS frame)

Referring to Claim 71, Okamoto (U.S. Patent No.: 6,731,876 B1) teaches: A data transmission method for data packets formed by encapsulating a first type of frames in a second type of frames as payload with appropriate overheads, from a physical layer side device to a network layer side device, each of the said first type of frames including a SAPI field, and an information field (Fig 7) comprising the steps of:

receiving the data packets from the physical device (27 per Fig 7. It would have been obvious to one of ordinary skill in the art a the time of the invention that the inverse functions can be performed in order for data to be received from a transmitter)

A second de-framing step for removing the overheads, and extracting the first type of frames from the payload of the second type of frames (25 & 24 per Fig 7. It would have been obvious to one of ordinary skill in the art a the time of the invention that the inverse functions can be performed in order for data to be received from a transmitter)

A first de-framing step for extracting the address field and the data contained in the information field contained in the information field from the first type of frames (23 per Fig 7 converts from PPP to IP. It would have been obvious to one of ordinary skill in the art a the time of the invention that the inverse functions can be performed in order for data to be received from a transmitter)

comparing the value of the SAPI field with a set of preset values including at least a first value and a second value, and if the value of the SAPI field data matches the first value, determining the extracted data is a first type and if the value of the SAPI field matches the second value, determining the extracted data is of a second type (23 per Fig 7 converts from PPP to IP. It would have been obvious to one of ordinary skill in the art a the time of the invention that the inverse functions can be performed in order for data to be received from a transmitter)

transmitting means for transmitting the extracted data packets and the determining result to the network layer side device (21 per Fig 7)

Okamonto does not expressly call for: SAPI identifier but teaches that an IP packet is inserted into an PPP packet per col. 9 line 31-col. 10 line 56.

Araujo teaches: SAPI identifier (100 per Fig 2 or SAPI identifier and col. 3 line 28-30 and col. 4 line 63-col. 5 line 26)

It would have been obvious to one of ordinary skill in the art at the time of the invention to remove the Protocol or SAPI identifier field in the apparatus of Okamonto in order to SONET to IP converter which is standards compliant.

In Addition Araujo teaches:

Regarding Claim 72, wherein said first type of frames include start flag, address field, control field, information field including said data packets, FCS field, and end flag, and said SAPI field is at the address field (Protocol or SAPI which has an address field per Fig 2)

Regarding Claim 73, wherein said SAPI field is one single octet and said control field is of one single octet said SAPI is "ox04" for Ipv4 packets, "0x06" for Ipv6 packets, "0xff for PP/HDLC packets solution (100 or SAPI field can be 8 bits or a single octet. The reference teaches that multiple packet types can be sent in the information field. Specific codes for packet types are a design choice)

Regarding Claim 74, wherein first framing type encapsulates said data in a format of start flag, address field, control field, SAPI field including said SAPI identifier, information field including said data packets, FCS field, and end flag to form the first type of frames (103 or start flag, 100 or SAPI field, value in 110 or SAPI identifier, 104 or address, 101 or information, 106 or FCS 107 or end flag per Fig 2)

Regarding Claim 75, wherein said SAPI field is one single octet and said control field is of one single octet (100 or SAPI field can be 8 bits or a single octet)

Regarding Claim 76, wherein said comparing and determining step comprising a frame type recognizing step for extracting the frame type indicator from the address field to recognize the type of the first type of frames type encapsulated in the SDH/SONET frames if the frame type indicator is "04x04 , the received frames are determined to be LAPs frames , if the frame type indicator is 'oxff", the received frame are PPP frames (The reference teaches that various kinds of packets can be sent per col. 5 lines 1-26. It would have been obvious to one of ordinary skill in the art at the time of the invention to have a different code in the address field for a different packet type)

Regarding Claim 77, wherein said comparing and determining step further comprising a SAPI extracting means for extracting the SAPI value from the SAPI field following the control field, if the frame type recognizing means determines the frame type indicator in the address field is "0x04", which indicates the received frame are LAPS frames, the SAPI extracting means goes to the SAPI field to extract the SAPI value which shows the type of data packets, i.e., "0x0021" for Ipv4 data packets, "0x0057" for Ipv6 data packets, if the frame type recognizing means determines the frame type indicator in the address field is "0xff", and the SAPI is "0021" then the received frames are determined to be PPP frames , and can be set for further PPP processing (The applicant broadly claims "LAPS frames". The reference teaches that various kinds of packets can be sent per col. 5 lines 1-26. It would have been obvious to one of ordinary skill in the art at the time of the invention to have a different code in the protocol or SAPI field and address field for different kinds of packets)

Regarding Claim 78 wherein said comparing and determining step perform the determining function of the first four octets of each of the first type of frames: the address field (one octet) the control field (one octet, and the SAPI field (tow octets), for facilitating a 32 bit processing the first four octets "04 03 00 21" represents Ipv4 packets, "04 03 57" represents Ipv6 packets and "ff 03 00 21" represent Ipv4 PPP/HDLC solution (The reference teaches that various kinds of packets can be sent per col. 5 lines 1-26. It would have been obvious to one of ordinary skill in the art at the time of the invention to have a different code in the address field for a different packet types which is a design choice)

Regarding Claim 79 further comprising a descrambling means for performing X to 43+1 descrambling, said de-scrambling means includes a XOR gate and a 43 bit shift register, and the output bits is exclusive-order with the input scrambled data bits (The examiner takes official notice that polynomial descrambling in SONET is well known in the art. The value of the polynomial chosen is based upon a design choice. It would have been obvious to one of ordinary skill in the art at the time of the invention to descramble the data after removal from the SONET frame)

In Addition Okamoto teaches:

Regarding Claim 80, wherein the said start flag and end flag are "07E" (103 or start and 107 or end per Fig 2. The value is a design choice)

Regarding Claim 81, wherein said first framing means performs inter-frame fill (Padding per Fig 3 or interframe fill)

Regarding Claim 82, wherein said first deframing means performs a decode procedure to decode 0x7E as 0x7D, 0x5E, 0x7D as 0x7D, 0x5D (inverse of Padding per Fig 3. The bit sequence utilized for stuffing is a design choice)

Regarding Claim 83, wherein said first wherein the received FCS field is verified by calculating FCS checksum over all octets between the start flag and the end flag (The examiner takes official notice that reading of a FCS utilizing a polynomial is well known in the art. It would have been obvious to create a inverse FCS base upon a polynomial in order to detect errors. The polynomial function utilized is a design choice)

Regarding Claim 84, wherein the end flag of a previous frame is the start flag of a subsequent frame (The examiner take official notice that the end flag of a previous frame is the start flag of a subsequent frame is well known in the art per Para 3.1 on pg 5 of RFC 1662. It would have been obvious to one of ordinary skill in the art at the time of the invention to add the processing of the RFC in order to be standards compliant.)

Regarding Claim 85, wherein the output data packets are buffered for rate adaptation before being transmitted to the network (The examiner take official notice that rate adaptation is well known in the art of SDH processing per U.S. Patent No.; 6,496519 B1 per col. 7 lines 53-col. 8 line 9. It would have been obvious to one of ordinary skill in the art at the time of the invention to add rate adaptation buffer to the packets in order to prevent overflow inserting packet data into the SDH virtual container)

In Addition Okamoto teaches:

Regarding Claim 86 wherein said physics layer is one of SDH/SONET, simplified SDH/SONET, pseudo-synchronous digital hierarchy, and WDH (WDM or SDH per col. 1 line 18-col. 2 line 22)

Regarding Claim 87, wherein said data packets from network layer are IPv4, Ipv6, IS-IS, PP packets, or MPEG data stream, each corresponding to a predetermined SAPI value, respectively, and said first type of frames are LAPs frames and the second type of frames are SDH/SONET frames (The applicant broadly claims LAP frames. The primary reference Okamoto teaches convert PPP frames into SDH per Fig 7. The examiner interprets the structure of Araujo Fig 2 as a LAPS frame)

Referring to Claim 88, Okamoto discloses: A data transmission apparatus for transmitting data packets from a network layer side device and a physical layer side device (Fig 7) comprising:

First receiving means for receiving the data packets of a certain type from the network layer side device (21 per Fig 7)

SAPI identifier generating means for recognizing the type of the data packets and the generating a SAPI identifier according to the recognized type (23 per Fig 7 converts packets from IP to PPP)

First framing means for encapsulating the SAPI field including said SAPI identifier and an information field including said data packets into a frame to form a first type of frames (23 per Fig 7 converts packets from IP to PPP)

Second framing means for encapsulating the first type frames into a payload portion, inserting appropriate overheads to form a second type of frame (24 & 25 per Fig 7

A first transmitting means for outputting said second type of frames to the physical layer side device (27 per Fig 7)

A second receiving means for receiving the data packets from the physical device (27 per Fig 7. It would have been obvious to one of ordinary skill in the art a the time of the invention that the inverse functions can be performed in order for data to be received from a transmitter)

A second de-framing means for removing the overheads, and extracting the first type of frames from the payload of the second type of frames (25 & 24 per Fig 7. It would have been obvious to one of ordinary skill in the art a the time of the invention that the inverse functions can be performed in order for data to be received from a transmitter)

A first de-framing means for extracting the address field and the data contained in the information field contained in the information field from the first type of frames (23 per Fig 7 converts from PPP to IP. It would have been obvious to one of ordinary skill in the art a the time of the invention that the inverse functions can be performed in order for data to be received from a transmitter)

Determining means for comparing the value of the SAPI field with a set of preset values including at least a first value and a second value, and if the value of the SAPI field data matches the first value, determining the extracted data is a first type and if the value of the SAPI field matches the second value, determining the extracted data is of a second type (23 per Fig 7 converts from PPP to IP. It would have been obvious to one of ordinary skill in the art a the time of the invention that the inverse functions can be performed in order for data to be received from a transmitter)

A second transmitting means for transmitting the extracted data packets and the determining result to the network layer side device (21 per Fig 7)

Okamonto does not expressly call for: SAPI identifier but teaches that an IP packet is inserted into an PPP packet per col. 9 line 31-col. 10 line 56.

Araujo teaches: SAPI identifier (100 per Fig 2 or SAPI identifier and col. 3 line 28-30 and col. 4 line 63-col. 5 line 26)

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the Protocol or SAPI identifier field as well as remove the SAPI identifier to the apparatus of Okamonto in order to build IP converter to SONET and SONET to IP converter which is standards compliant .

Referring to Claim 89, Okamoto discloses: A router device comprising a plurality of line cards, and at least one of the line cards includes (Fig 7) comprising:

First receiving means for receiving the data packets of a certain type from the network layer side device (21 per Fig 7)

SAPI identifier generating means for recognizing the type of the data packets and the generating a SAPI identifier according to the recognized type (23 per Fig 7 converts packets from IP to PPP)

First framing means for encapsulating the SAPI field including said SAPI identifier and an information field including said data packets into a frame to form a first type of frames (23 per Fig 7 converts packets from IP to PPP)

Second framing means for encapsulating the first type frames into a payload portion, inserting appropriate overheads to form a second type of frame (24 & 25 per Fig 7

A first transmitting means for outputting said second type of frames to the physical layer side device (27 per Fig 7)

A second receiving means for receiving the data packets from the physical device (27 per Fig 7. It would have been obvious to one of ordinary skill in the art a the time of the invention that the inverse functions can be performed in order for data to be received from a transmitter)

A second de-framing means for removing the overheads, and extracting the first type of frames from the payload of the second type of frames (25 & 24 per Fig 7. It would have been obvious to one of ordinary skill in the art a the time of the invention that the inverse functions can be performed in order for data to be received from a transmitter)

A first de-framing means for extracting the address field and the data contained in the information field contained in the information field from the first type of frames (23 per Fig 7 converts from PPP to IP. It would have been obvious to one of ordinary skill in the art a the time of the invention that the inverse functions can be performed in order for data to be received from a transmitter)

Determining means for comparing the value of the SAPI field with a set of preset values including at least a first value and a second value, and if the value of the SAPI field data matches the first value, determining the extracted data is a first type and if the value of the SAPI field matches the second value, determining the extracted data is of a second type (23 per Fig 7 converts from PPP to IP. It would have been obvious to one of ordinary skill in the art a the time of the invention that the inverse functions can be performed in order for data to be received from a transmitter)

A second transmitting means for transmitting the extracted data packets and the determining result to the network layer side device (21 per Fig 7)

Okamonto does not expressly call for: SAPI identifier but teaches that an IP packet is inserted into an PPP packet per col. 9 line 31-col. 10 line 56 or line card.

Araujo teaches: SAPI identifier (100 per Fig 2 or SAPI identifier and col. 3 line 28-30 and col. 4 line 63-col. 5 line 26)

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the Protocol or SAPI identifier field as well as remove the SAPI identifier to the apparatus of Okamonto in order to build IP converter to SONET and SONET to IP converter which is standards compliant .

The combination of Okamonto and Araujo do not expressly call for: line cards but teaches a switch or router.

It is within the level of one skilled in the art at the time of the invention to implement the switch or router shown in the reference in hardware and microcode. It would have been obvious to one of ordinary skill in the art at the time of the invention implement a router in hardware and microcode via line cards.

Claim Rejections - 35 USC § 112

4.0 The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it

> pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 18, 22, 62-66 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Referring to Claim 18, The specification inadequately describes " line side packet loopback means to loopback the first-type of frames extracted from the second frames into the first FIFO for test purpose"?

Referring to Claims 19, 67, & 86; What is meant by "simplified SONET, pseudo-synchronous digital hierarchy"? These are not terms of art that have a known meaning.

Referring to Claim 22, The specification inadequately contains written description on "DS codepoint is extracted from the network layer data to control the queue algorithm".

Referring to Claim 62, The specification inadequately contains written description on "wherein said first framing step inter-frame fill is performed and FIFO error recover is transmitted"

Claim Rejections - 35 USC § 112

5.0 The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 18-19, 20-23, 24, 32, 44-45, 47-49 52-53, 62-67, & 86 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Referring to Claim 18, What is meant by " line side packet loopback means to loopback the first-type of frames extracted from the second frames into the first FIFO for test purpose"?

Referring to claims 19, 67, & 86; What is meant by "SDH/SONET"? Does the slash mean "and" or "or"?

Referring to Claims 20 & 44 What is meant by "SDH/SONET like"?

Referring to Claims 23, 24, & 32, What is meant b y "PPP/HDLC". Does the slash mean "and " or "or"

Referring to Claim 22, What is meant by "DS codepoint is extracted from the network layer data to control the queue algorithm".

Referring to Claim 47, Claim 47 depends upon multiple dependent claims therefore it is indefinite.

Referring to Claim 51 & 52, Claims 51 and 52 depend upon each other therefore they are indefinite.

Referring to Claim 62, What is meant by "wherein said first framing step inter-frame fill is performed and FIFO error recover is transmitted"

Claim Objections

6.0 Claims 18, 25-45, 71-87 are objected to because of the following informalities:

Referring to Claims 25 & 71 "encapsulating a first type" when the examiner believes that "de-encapsulating the first type is occurring. The examiner suggests replacing "encapsulating"de-encapsulating".

Referring to Claim 18, Claim 18 is dependent upon claim 3. The apparatus is converting first frames to second frames. This claim appears to be totally inconsistent with claim 3. The examiner suggests cancellation

Referring to Claim 45, Claim 45 depends on claim 44. Claim 45 is totally inconsistent with the limitations of claim 44. The examiner suggests cancellation.

Appropriate correction is required.

Conclusion

7.0 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert W Wilson whose telephone number is 571/272-3075. The examiner can normally be reached on M-F (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on 571/272-3078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Robert W. Wilson

Robert W Wilson
Examiner
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RWW
12/15/04

KENNETH VANDERPUYE
PRIMARY EXAMINER